The Relationship Between Costs And Availability Of Credit: An Empirical Study For Some Tunisian Firms

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ABSTRACT

The aim of this paper is twofold. First, the paper aims to analyze the relationship between the number of bank enterprise relationships and the cost of credit for some Tunisian firms. Using an econometric model based on panel data analysis, results show that the number of bank financing lenders increases the cost of credit. Second, the paper aims to determine the rapport between the number of bank partners and the availability of the credit. By using a qualitative model based on the logit estimation, results show that the number of banks affects negatively and significantly the availability of credit.

Keywords: Bank Relationships; Cost of Credit; Availability of Credit; Tunisian Firms; Tunisian Banks

INTRODUCTION

Earlier research analyzed the consequence of the number of bank relationships on the cost and availability of credit is limited. In addition, the available articles show an ambiguity on the nature of this relationship. This ambiguity comes from the strategy of the firm's choice between single and multiple partners. This decision is not a straightforward task because, on the one hand, single relationship is risky and undesirable when a firm needs liquidity especially in a period of crisis and on the other hand, multiple relationships are costly, in particular for micro and small firms. In this sense some enterprises prefer a single bank partner and some other prefer multiple bank relationships. Broadly, each strategy has simultaneously many advantages and some disadvantages which may make the decision very complicated. However, to be effective, the adoption of an adequate strategy should depend on the "nature of the firm" (Coase 1937). In other sense, an appropriate decision should take into account the characteristics of the firm and its environment. This means that each company according to its characteristics can choose the right strategy to acquire the maximum benefit. A bad strategy could be costly and sometimes fatal for some firms.

Generally speaking, the behavior of the firm's managers may influence the choice of the number of bank relationships and therefore the cost of credit. As Schumpeter (1912) argued a hundred years ago, a good entrepreneur is the key element of the wealth of the company. A 'vigilant' entrepreneur should be capable of negotiating different types of contracts and able to reduce transaction costs due to his good strategies. Consequently the wealth of the firm will increase. A good entrepreneur should also build strong relationships between his enterprise and its partners, notably banks in order to obtain credit at a low costs. In this sense one question arises: should a firm moves from single to multiple bank relationships or from multiple to single bank relationships to minimize its costs of credit? The aim of this paper is to resolve the following two questions:

- Is there is a positive effect between the number of bank relationships and the costs of credit?
- Is there a relationship between the number of bank financing lenders and the availability of credit?

This paper is organized into three sections. The first one analyses the link between the number of bank partners adopted by some Tunisian firms and the cost of credit. We use an econometric model based on panel data technique relating to a sample of 130 Tunisian companies observed during the period of 2000-2007. These companies operate in various sectors; these include trade, industry and service. Results show that the number of bank relationship increases the cost of credit. The second section determines the rapport between the number of bank partners and the availability of the credit. We use a qualitative model based on logit estimation for 128 Tunisian firms operating in the same sectors cited above. The results demonstrate that the number of banks affects negatively and significantly the availability of credit. The third section concludes.

I- THE TUNISIAN BANKING SYSTEM AND THE PROBLEM OF FINANCING

In this section we firstly give an overview of the Tunisian banking system as well as the principal sources of financing companies. Secondly we give a theoretical study on the relationship between the number of bank financing lenders, availability and the cost of credit. The literature reviews allow us to build our assumptions to test whether the number of bank partners affects the cost of credit of Tunisian firms or not.

1. Structure of the Tunisian banking system

The Tunisian banking system currently includes 20 deposit banks. In 2005, its organization has known three major events: first the creation of a new bank called "Banks of Financing of Small and medium-sized firms", second the privatization of the "Banque de Sud" which gives the birth of "Attijari Bank" and third the change of the statute of some development banks (STUSID, BTL, TQB and BTK) to universal banks. In January 2008 and within the framework of the programme of restructuration of the banking system there was the privatization of the "Tuniso-Koweitienne Bank" by the transfer of 60% of its capital to the profit of financial company «OCEOR», a subsidiary of the French group "Caisse d'Epargne".

In Tunisia, the banking system is mostly made-up of private banks with mixed capital (70%); nevertheless the public banks play a major role in financing the Tunisian economy. Among the 20 despot banks, 11 of them are listed in Tunis Stock Exchange.

In Tunisia, banks are not the principle source of financing. As the Table 1 points up, internal finance is the main source of financing with more than 50% followed by banking credits (19.33%).

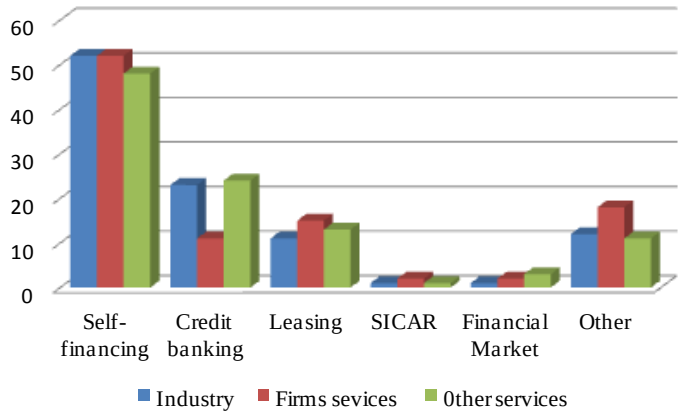
Table 1: Principal sources of the Tunisian financing companies (Values are in %)

Sectors	Industry	Services	Others	Mean
Internal finance	52	52	48	50,67
Credit banking	23	11	24	19,33
Leasing	11	15	13	13,00
SICAR	1	2	1	1,33
Financial Market	1	2	3	2,00
Other	12	18	11	13,67
Total	100	100	100	100

Source: World Bank (companies investigation; www.entreprisesurvey.org) and ITCE (competitiveness investigation 2008)

As the Chart1 illustrates, industrial companies rely more on their internal resources rather than credits from banks. Banks seems to be the "lenders at the second range" for neither services firms (transport, tourism, health, etc) nor for other enterprises. Graph also shows that Tunisian financial market does not have any weight in promoting the investment activities in Tunisia.

Graph 1. Principal sources of Tunisian compagnies financing



Source: The authors from the World Bank (companies investigation; www.entreprisesurvey.org) and ITCE (competitiveness investigation 2008)

For all sectors, the contribution of the banking system remains moderate. According to data of the competitiveness investigation (ITCEQ) and those of investigations companies of the World Bank (see Table 1), the Tunisian banking credit contributes by 19,3% only to the long term financing needed by Tunisian enterprises, while 50,6% of financing is done with the self-financing. According to Mazioud *et al*. (2010) and on the basis of data relating to Tunisian companies observed over the period 1983-2005, the self-financing is the most significant resource of financing. In addition, the financial market, considered as the most efficient way for economic growth (Greenwood and Smith 1996) has a marginal role in the Tunisian investment activities. This mysterious situation pushed us to investigate the nature of the relationship between Tunisian firms and banks to understand why banks do not play a significant role in credit market activities. In our knowledge, there are no studies yet analyzing in depth the nature of the financing relationship between firms and banks in Tunisia. Actually, no one has any idea about the number of bank lenders relationship, availability and the cost of funding in Tunisia. This study could be considered as the first one in this field. In the next paragraph we briefly analyze from a cost benefit approach the relationship between the number of lenders, availability and costs of credits.

2. Number of bank lenders, cost and availability of funding: an ambiguous relations

Financing is the spine of firms' development and the life blood of economic dynamic. Broadly, many conditions are fixed by banks to accept financing an enterprise. This circumstance shows that building a relationship with a bank is not a straightforward mission. It also shows that these conditions could be the cause of the marginal role of banks in Tunisia[1].

Generally speaking, the bank enterprise relationship depends of two conditions: the situation of the global economic environment and the global situation of the firm. The first condition is with reference to all factors that could threaten the stability of the national and international financial market. This means that political turmoil, crisis or any environment events (earthquake, Tsunami, flood, etc) can influence the decision of banks to allocate credits. The second condition reflects the *health* of the firm. This means that a company with an outstanding results and a good historical financial statement is supposed to have an easy access to funds rather than other firms. This uncertainty pushes some enterprises to build multiple bank relationship to avoid the high cost of credit and to ensure their further financing in an instable environment and pushes some others firms to keep their single bank relationship because the costs of multiplying the financing lenders are high.

[1] If Tunisian banks put high constrains of financing, firms will rely on other sources of funding. Thus, the role of banks will become less significant.

Actually, studies on the choice between single and multiple bank relationships are not unanimous. Some papers show that single lending partner is the ideal for firms and some others demonstrate that multiple partners is the perfect strategy. Generally speaking, we can classify the current literature in two ranges. The first range of study investigates the relationship between the number of bank relationships (single and multiple) and the availability of credit[2]. For example, Cole (2010) argued that with a single partner, the firm enjoys easier access to finance and lower interest rates in the event of financial panics. While being financed with a limited number of banks, the two parts (banks and firms) obtain the information required about each other more easily which may strengthen their partnership. Diamond (1984) argued that a good relationship reduces the borrowing costs and decreases the informational asymmetry and thus facilitates the access to funding. Multiple bank relationships can provide the same purpose, but at a high cost due to a risk premium. With a single bank relationship, the costs of monitoring are lower and the cost of financing is affordable. A single creditor has a stronger incentive to monitor its borrowers and thus can exert a positive impact on the firm's performance (Fok and al. 2004). *Al contrario*, Sharpe (1990) and Rajan (1992) argued that with a single lending partner, the bank might exploit its bargaining power over the firm and extract rents from loan contracts. This means that micro-enterprises and small firms with an exclusive lender may be excluded if their single partner judges their situation as unstable as regard of their size. In addition the bank may put new constraints for their borrowing demand. The unavailability of credit could hurt the wealth of firms and could lead to problem of liquidity. In this situation, a firm with multiple bank relationship is preferable and the probability of borrowing is better than a situation with a single partner.

The second range of literature investigated the link between the number of bank relationship and the cost of credit. Results are also divergent from one study to another one and from one country to another one. For example, the study of Peterson and Rajan (1994, 1995) based on U.S. SMEs data, demonstrated that the exclusivity of a bank relationship reduces the cost of financing and the probability of credit rationing. Authors concluded that banks increase their credit if the market is concentrated. Harhoff and Korting (1998) found that there is no correlation between the cost of credit and the number of bank relationships. However, they argued that a company with multiple bank relationships is exposed to credit rationing more than with an exclusive partner. The empirical study of De Bodt *et al.* (2005) showed that there is a positive causality between the number of bank relationships, the availability of credit and the performance of firms. With a single financing lender, the interest rate is competitive, the cost of credit is low and consequently the profit is high (Peterson and Rajan, 1994). The firm with various bank financing lenders has the privilege of having access to credit at a low cost especially in a period of crisis[3]. D'Auria et al (1999), based on Italian data, found a negative relationship between interest rates and the number of bank relationships. Detragiache et al (1998) found a positive correlation between fragility and multiple banking partners.

Should Tunisian firms weave a single or a multiple bank relationship to benefit from an affordable banking credits and an easier access to finance?

Given the ambiguous effects of the number of bank relationships on the cost and availability of credit we will set the following hypotheses for our investigation regarding the Tunisian bank enterprise relationships:

H_1: The number of bank relationships affect the costs of credit

$H_{1\text{-}1}$ the number of bank relationships increases the cost of credit

$H_{1\text{-}2}$ the number of bank relationships decreases the cost of credit

H_2: The number of bank relationships affect the availability of credit.

$H_{2\text{-}1}$ the number of bank relationships promotes the availability of credit.

$H_{2\text{-}2}$ the number of bank relationships decreases the availability of credit

The hypothesis H_1 will be analyzed in section 2 while H_2 will be tested in section 3.

[2] Availability of credit means the easy access to borrow by companies

[3] Hoshi. Kashyap. and Sharsftein. (1990), argued that in a period of crisis the risk of illiquidity and the credit rationing is reduced as confidence has built between the two institutions.

II- MODELING THE NUMBER OF BANK RELATIONSHIPS, AVAILABILITY AND THE COST OF CREDIT

1. Number of bank relationships and the cost of credit

In this paper we will use a variable that links the number of bank relationships and the availability and costs of credit. This variable measures the switch from a single to multiple relationships and vice versa. This variable is measured as follow:

Switch = Number of bank relationship $_{(t)}$ – Number of bank relationship $_{(t-1)}$

1.1. The methodology

We collected data related to a sample of 130 Tunisian companies observed during the period of 2000-2007. These companies operate in various sectors; these include trade, industry and service. In our study we use an econometric model based on panel data estimation. The equation is written as follows:

$$\text{Cost} = \beta_0 + \beta_1 Size_{it} + \beta_e Age_{it} + \beta_3 Dur_{it} + \beta_4 Cncn_{it} + \beta_5 Mltp_{it} + \beta_6 Switch + \beta_7 NBANK_{it} + \varepsilon i$$

In this model, the Chow test and the Breusch Pagan test (LM at 1%) and the Hausman test are significant. Using the between and within estimators ($R^2b < R^2w$), we apply the fixed effects method. Descriptive statistics and correlation matrix of the estimation are presented in Table 2 to give more information on the specifics of the sample as well as the correlation between variables[4].

Table 2: Descriptive statistics

Variables	N. of Obs.	Mean	Std. Dev	Minimum	Maximum
Cost	800	0.0837	0.0111	0.0575	0.1181
Size	800	0.9658	0.6058	-0.1815	2.1852
Age	800	9.054	4.6717	0	26
Dur	800	8.970	4.688	0	26
Cncn	800	0.721	0.0095	0.7090	0.7425
Mltpl	800	0.411	0.4923	0	1
Swtch	800	0	0.6504	-3	3

Notes: (COST): cost of credit, (Age): age of the firm measured by the difference in the grade and date of creation of the firm (SIZE): firm size measured by the natural logarithm of Total assets (DUR): duration of banking relationship measured by the number of years from the entry of both parties transactions (MLTPL): the multiplicity of the relationship dummy takes 1 if the firm is funded by two or more banks 0 if not, (SWTCH), passage from one relationship to another as measured by number of banks at time (t) minus the number of banks at time (t-1), (CNCN): concentration bank as measured by the HHI index of concentration.

The results of this descriptive study show that the average cost of credit is 8.37%, (Money Market Rate plus 3.5 point). As the average age of the sample is about 9 years (9.05). Similarly, the average length of the relationship between bank and company reached a value of 9 years (8.97). This figure indicates the nature of client relationships qualified as long term. The average concentration level of the banking system is 7.21% which provides information on a low concentration in favor of banking competition. The average value of multiple banking is 0.411; it remains low by comparison with other cases.

The correlation matrix presented in Table 3 shows that the correlation between the different variables is relatively low except for SWTCH / Mltpl (26.5%), Dur/age (28.7%) and Mtpl/Size (25.3%).

[4] Results show the absence of multicollinearity between the different variables of our estimation.

Table 3: The correlation Matrix

	Cost	Size	Age	Dur	Cncn	Mltpl	Swtch
Cost	**1**						
Size	0.0432	**1**					
Age	-0.390	0.0047	**1**				
Dur	-0.391	0.0059	0.2874	**1**			
Cncn	-0.051	-0.0182	-0.0766	-0.077	**1**		
Mltpl	0.009	0.2531	0.0877	0.1013	-0.001	**1**	
Swtch	0.082	0.0215	0.0272	0.0275	-0.098	0.2658	**1**

1.2. Results and interpretation of the estimation

Our results presented in Table 4 show that the age of the firm, the duration of the bank/company relationship and the concentration of the banking system are negatively correlated with the cost of credit. Alternatively, the variables Size, MLTPL and SWTCH act positively.

Table 4: Results of the fixed effect model

Independent variables	**Dependent variable** (Cost of Credit = Cost), (FE)	
	Coefficients	(*z- statistic*)
Age	-0.0050** (0.014)	-2.46
Size	0.0012* (0.099)	1.67
Dur	-0.0013 (0.508)	-0.66
Mltpl	0.0013 (0.13)	1.51
Swtch	0.0009** (0.041)	2.11
Cncn	-0.0830*** (0.002)	-3.09
R^2w	0.6186	-
R^2b	0.0061	-
Fisher Test Prob > F	11.47*** (0.0000)	
Hausman Prob>chi2	1171.08*** (0.0000)	
Breusch-Pagan (LM) Prob > chi2	17.33*** (0.0000)	
Nomber of observations	800	

The variables Age, Size, Swtch and Cncn act significantly on the cost of credit, on the other hand the duration of the bank relationship (DUR), and multiple bank (MLTPL) have no significant correlation with the dependent variable (cost of credit).

The Age, one of the main characteristic of the firm, can influence the credit allocation (cost and availability), and thus the performance of the company. Our results indicate a significant negative correlation between the age of the firm and the cost of credit. A descriptive study of our sample, classified firms by age, sector and number of banking relationships, show that the average age of our firms is 30 years. As a result, these firms have a more effective administrative process, a good reputation vis-à-vis of their banks and a good negotiation. All these factors are likely to set lower the cost of financing.

Most empirical studies on the relationship between the age of the firm and the cost of credit show the following results: Start-ups or less aged companies suffer higher credit costs because of their lack of experience and reputation. Similarly, uncertainty about future projects force banks to charge higher rates[5]. Broadly, the older the companies are, the more their market share increases and the more age improve the firm's image vis-à-vis bankers. During this time banks acquire more information on the financial situation of their customers (only companies in our case). This allows them to judge the financial capacity of the firm and to determine the most suitable rate of credit.

However, one should not forget that if the firm is in the final phase of its lifecycle, its investment opportunities are shrinking and their market share declines. This may affect its financial position and may influence trading conditions. Hence, it can undergo a higher cost of credit. The size of the firm is an important factor influencing the cost of credit either upward or downward. Large or small, the company has a different interest rate. Typically, large companies with a low level of risk, benefit from lower lending rates. While those of small and medium size face a higher cost.

In our study, the size is positively and significantly correlated with the cost of credit. Generally Tunisian SMEs use short-term bank loans as funding sources. It is well known that fixed short-term loan rates are lower than fixed long-term credit. Despite this relationship, we find a positive rapport between the size and cost of credit.

Depending on the size of the firm, one can consider the relationship between the size and the cost of credit. Most empirical studies have shown that for a large company, the size can negatively affect the cost of credit. In other words, large firms enjoy a lower interest rate. The good reputation, quality of the bank/company relationship, the level of risk and financial condition of these companies are likely to reduce the cost of credit. Large companies can benefit from competition between banks. These businesses can be financed directly from the fact that their size and their financial situation allow them to access the capital market. To attract the largest number of businesses, banks may have preferred rates and good credit conditions. Small and medium size businesses are unable to access capital markets. Thus, bank financing is the only source. For them, size is an indicator of financial need and determines their ability to honor their commitments.

In this study, the duration of the relationship between bank/company (DUR) exerts a negative and insignificant effect on the cost of credit. Statistical data illustrated that the average number of relationships varies between two and three relations. This indicates low multiple bank-company relationships in Tunisia. Therefore, it indicates the existence of long-term relationships between banks and enterprises. Tunisian firms have no incentive to expand their banking relationships. Instead, they seek to forge exclusive relationships and long-term ability to secure future funding in good conditions.

Over the duration of the contract, banks and firms acquire more and more information about each other. A friendly relationship between the two institutions could arise during this time and could lead to a good negotiation of a contract. The bank does not need to set a high interest rate because it guarantees a high probability of reimbursement of its clients and the company enjoys a low-cost credit. According to Eber (1993), the long-term bank relationships improve the functioning of credit market and they are the source of its efficiency.

Multiple bank partners (MLTPL) act positively and insignificantly on the cost of credit. Despite the law level of multiple bank enterprise relationships in Tunisia[6] our results indicate a positive relationship between multiple bank partners and the cost of credit.

The two main dimensions of the bank/company relationship (number, duration) are an inverse function. As the number of bank relationships decreases, the duration increases. On the contrary, if the number of relationships increases, the duration decreases.

[5] In the short term, the bank ignores the probability of the success of the project, so that in the long term and based on historical data and statistics, the situation becomes a little clearer but it still remains uncertain. The future is unknown.
[6] In term of mean of number of bank relationships

Regarding the transition from one relationship to another one, the variable (SWTCH) is positively and significantly correlated with the cost of credit. These costs are related to the research information, coordination costs and the transaction costs. These costs will be multiplied by the number of banks when moving from one relationship another. This has inflated the cost of credit. The interest rate for a new company differs from an interest rate set for an old one. The transition from one bank partner to another bank raises a new imperfect relationship because both institutions do not have enough information about each other. The existence of asymmetry of information pushes the company to hide some private information on one hand and oblige the bank to set a higher cost of credit on the other hand.

Our results dealing with the relationship between the variable SWTCH / COSTS are similar to those found by Farinha and Santos (2002), in which passage from one relationship (single or multiple) to another increases the cost of credit. According to these authors, a credit acquired from a minimum number of banks reduces the cost of credit and generally increases the availability of funds.

The variable reflecting the situation of the banking system is the concentration (CNCN). It is measured by the number of participants in the credit market. This variable is negatively and significantly correlated with the cost of credit. As the number of players increases the concentration decreases in favor of banking competition. The concentration index of the Tunisian banking system recorded a downward trend moving from 16.55% in 1980 to 14.11% in 1998 and 12.88% in 2001. This low concentration is offset by a significant level of competition to attract more and new customers. The results of our estimation show that banking concentration has a negative effect on the cost of credit.

In conclusion, there is a positive and significant effect between the number of banks financing the Tunisian companies and the cost of credit. These costs increase when moving from one relationship to another (SWITCH). This allows us to accepting the hypothesis $H_{1\text{-}1}$: the number of bank relationship increases the cost of credit.

After studying the relationship between the number of banks and the cost of credit, we will determine in the next section what the effect of multiple bank relationships has on the availability of funds.

2. Number of bank relationships and the availability of credit

2.1. The econometric methodology

Our sample is made up of 128 Tunisian companies operating in the commerce, industry and services sectors for the period of 2000 to 2007. To collect qualitative data, a questionnaire was distributed. To measure the availability of credit, we set a dichotomous variable (DISP), taking the value of 1 when it supports the new financing agreement (increase or support) and 0 in other cases (withdraw, reduce or stabilize). The model specifies the availability of credit and takes the form of a logistic function as shown below:

$$y_i = P(DISP = (\frac{1}{x_i}) = \frac{e^{\beta' xi}}{1 + e^{\beta' xi}} \quad (1)$$

$$\beta'_{\text{xi}} = \beta_0 + \beta_1 NBANK_{it} + \beta_e Cncn_{it} + \beta_3 Stabl_{it} + \beta_4 AGE_{it} + \beta_5 Risk_{it} + \beta_6 Size_{it} + \beta_7 Dur_{it} + \varepsilon i \quad (2)$$

In our study, the dependent variable is a dummy (1 or 0). Consequently, we opt for the logit model to test the relationship among the banks and credit availability.

Table 5: Descriptives statistics

Variables	N of obs	Mean	std. Dev	Minimum	Maximum
Disp	1024	0.4384	0.4964	0	1
Nbank	1024	2.6132	1.1651	1	9
Cncn	1024	0.7215	0.0095	0.7090	0.7425
Stbl	1024	0.1104	0.0019	0.1064	0.1135
Age	1024	23.7812	18.1301	2	82
Risq	1024	3.1301	19.6998	0.8916	214.65
Size	1024	16.5918	2.0955	10.7500	21.112
Dur	1024	8.1711	0.2111	0	26

According to statistical Table 5 the average number of bank partners for each firm is 2.61. It varies between two and three relationships, which is low. The average of the concentration, measured by the HHI index, reached a value of 7.21%. Hence, low concentration in favor of banking competition despite the reduced number of banks operating in the Tunisian banking system.

The average value of bank stability is 11.4 % with a minimum of 10.64% and a maximum of 11.35%. The average age of firms in this study is 23 years. This reflects their experience and reputation. The average duration of customer relationships is 8.17 years. To verify the correlation between variables, we determined the correlation matrix in Table 7 which indicates that the correlation between different variables of our study is very low[7]. This implies the absence of multicollinearity between variables in our estimation.

Table 6: The correlation Matrix

	Disp	Nbank	Cncn	Stbl	Age	Risq	Size	Dur
Disp	**1**							
Nbnk	-0.0298	**1**						
Cncn	0.0332	-0.0728	**1**					
Stbl	0.0759	-0.0252	-0.1072	**1**				
Age	-0.0224	-0.0630	-0.0199	-0.0384	**1**			
Risq	-0.0441	0.0956	0.0014	-0.0003	-0.1316	**1**		
Size	0.0467	-0.0669	-0.0081	-0.0138	0.2994	-0.1967	**1**	
Dur	0.060	0.0795	0.0442	-0.0073	-0.1595	0.1093	-0.145	**1**

2.2 Results and interpretation

The logit model estimation presented in Table 7 shows the following results. The number of banks (NBank), the age of the firm and the level of risk (RISQ) negatively affect the availability of credits. Alternatively the size, the duration of the relationship (DUR), the stability (STBL), the size (SIZE) and the concentration (CNCN) act positively on our dependent variable (DISP). Only variables NBank, DUR, RISQ and STBL act significantly on the availability of credit. While those relating to age, size and bank concentration did not have any significant effect.

Our results illustrate a negative and significant relationship between the number of relationships and the availability of credit. Tunisian firms have a low multiple bank contract and they try to build exclusive and long term relationships. They prefer keeping a single relationship to avoid the cost of passing from one relationship to another one and they are worried about the loss of confidence of their principal partner which can reduce the availability of financing. In addition, as confirmed by the literature, multiple bank relationship is characterized by the existence of strong information asymmetry between the two parties. This may limit the proper evaluation of the financial situation of the company and often lead to credit rationing. This conclusion is similar to that found by Cole (1998). The author argues that the more the company increases its relationships the less it receives further funding because of information asymmetry.

[7] Except for Size/Age which is about 60%

Table 7: Modeling the effect of the number of bank relationships on the availability of credit for some Tunisians firms using Logit estimation

Independent variables	**Dependent variable** (Availability of Credit = disp), (Logit)	
	Coefficients	*(z- statistic)*
Nbank	-0.0671* (0.000)	-2.24
Age	-0.0010 (0.818)	-0.23
Size	0.05751 (0.146)	1.45
Dur	0.6654 ** (0.049)	1.97
Risq	-0.0062 * (0.077)	-1.77
Stbl	0.8668*** (0.009)	2.60
Cncn	0.9860 (0.129)	0.14
Pseudo R^2	0.0133	-
Wald chi2(7) Prob > chi2	17.47** (0.0146)	
Log pseudolikelihood	-692.67549	
Nomber of observations	1024	

***** Sig at 10%, ** sig at 5%, ***sig at 1%

Notes: (N.Bank): number of banks financing the company, (DUR): duration of banking relationship measured by the number of years from the entry of both parties in the transactions, (Age): Age of firm measured by the difference in the grade and date of creation of the firm (SIZE): firm size measured by the natural logarithm of total assets, (RISQ): measuring the level of risk, it is measured by the standard deviation of growth rates of turnover (CNCN): banking concentration measured by the HHI index of concentration. (Stable): banking stability measured by the level of credit risk.

Concerning the age of the firm, the effect of this variable on the availability of credit is negative and insignificant[8]. The repetitive nature of the transactions between the two institutions allows more gradual possession of information of both institutions. Throughout the evolution of their partnership, the bank acquires the necessary information which gives it adequate information on the situation of the debtor and a guarantee the firm future funding because of its reputation. A convivial relationship between the two institutions could occur. This means that the duration of the bank/enterprise relationship increases the credit availability even in the context of financial collapse such as the case of the recent financial subprime crisis on which banks refused the distribution of credit for start-up and new companies.

Unlike the effect of the age of the firm on the availability of credits, the size of the company has a positive and insignificant effect on the availability of credit. Although the majority of Tunisian firms, especially firms of our sample, are small and medium enterprises (SMEs)[9].

The risk level of the companies (RISQ) is a major constraint facing the availability of credits. The most risky companies are unable to honor their commitments. As a result, access to bank loans becomes costly leading to a reduction in the availability of credit. Our estimation confirms this opinion and shows a significant and negative correlation between the level of risk and the availability of credits. As the company is considered more risky, its subsequent availability of credit will be diminished because no bank is willing to distribute funds where the probability of retrieval is very low. In this case, the bank may refuse the credit requested by the firm. According to Farinha and Santos (2002), a high multiple bank relationship is associated with a higher level of risk. Our

[8] Most empirical studies have found a positive relationship between age and the availability of credit for businesses older. This relationship is negative in the case of young firms.

[9] This relationship is contradictory to the banking literature and most empirical studies.

descriptive study shows that the average number of bank relationships varies between two and three partners. Hence, low multiple bank partners by Tunisian companies lead to a good level of information sharing between banks and enterprises and thus a low level of risk.

In our model, the stability of the banking system has a significant and a positive effect on the availability of credit. This means that the more the banking system is stable, the more the bank grants credit[10]. The Tunisian banking system, despite its alarming level of impaired loans, has not experienced the phenomenon of instability and banking crises during the last decade. In comparison with countries of Southeast Asia and Latin America, the Tunisian banking system is stable and this stability positively affects the availability of credit.

As for the effect of concentration on the availability of credits, our estimation shows a positive and insignificant effect between these two variables. A low concentrated banking system reflects a higher level of competition. Caminol and Matutes (2002) showed that banking competition reduces credit rationing. A competitive credit market reduces interest rates paid on loans for the benefit of higher deposit rates. Once the savings increase, this liquidity will be used as credit to be distributed later. Nevertheless, high deposit rates reduce the margin of bank profits and increases the possibility of bankruptcy.

III. CONCLUSION

Several theoretical and empirical studies analyzed the effect of bank relationships on the cost of credit and the performance of firms. Many other articles investigated the relationship between bank partners and the availability of credit. In this paper, we simultaneously analyzed the relationships between the number of bank financing lenders, the costs and the availability of credit. Our research study is organized in two parts. During the first part, we analyzed the link between the number of bank partners adopted by some Tunisian firms and the cost of credit. We used an econometric model based on panel data technique related to a sample of 130 Tunisian companies observed during the period of 2000-2007. These companies operate in various sectors; these include trade, industry and service. Results show that the number of bank relationships increases the cost of credit. In the second part of the article we determined the rapport between the number of bank partners and the availability of credit. We used a qualitative model based on the logit estimation for 128 Tunisian firms operating in the same sectors. The results demonstrate that the number of banks affects negatively and significantly the availability of credit.

Disclaimer

The opinions expressed in this article are those of the author and they do not necessarily represent the official position of the Central Bank of Bahrain.

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[10] Recall that banking stability is measured in our study the level of credit risk. This choice goes back to the importance of this risk as a first and important risk destabilizing the banking system. Our results support the recent study of Fock et al (2004) on the positive effect of the banking stability on the availability of bank credit. However, they are different to those found by Farinha and Santos (2002).

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